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IMPLEMENTATION OF EARLY INITIATION OF BREASTFEEDING IN NEWBORNS FOR THE PREVENTION OF HYPOTHERMIA IN THE WORKING AREA OF PAKKAT COMMUNITY HEALTH CENTER, PAKKAT DISTRICT, HUMBANG HASUNDUTAN REGENCY, NORTH SUMATRA PROVINCE, 2024

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ABSTRACT

Background: Hypothermia is one of the leading causes of morbidity and mortality in newborns due to the inability of neonates to maintain body temperature. One effective effort to prevent hypothermia is through Early Initiation of Breastfeeding (EIBF) using skin-to-skin contact between mother and baby immediately after birth. **Objective:** This study aims to determine the effect of Early Initiation of Breastfeeding on the prevention of hypothermia in newborns within the working area of the Pakkat Public Health Center, Pakkat District, Humbang Hasundutan Regency, North Sumatra Province, in 2024. **Methods:** This study utilized a quasi-experimental design with a One Group Pretest-Posttest Design. The research population consisted of all normal newborns in the working area of Pakkat Public Health Center, totaling 20 infants, with a sample of 12 infants who met the inclusion criteria selected via the total sampling technique. Body temperature measurements were taken before and after EIBF implementation using a digital thermometer. Data analysis was conducted using the Paired Samples T-Test with a 95% confidence level ($\alpha = 0.05$). **Results:** The average body temperature of the infants increased by 0.68°C after EIBF. The results of the Paired Samples T-Test showed a p-value = 0.000 ($p < 0.05$), indicating a significant effect of EIBF implementation on increasing the body temperature of newborns. **Conclusion:** The implementation of Early Initiation of Breastfeeding is effective in increasing newborn body temperature, making it a viable routine intervention in essential neonatal services to prevent hypothermia.

Keywords: Newborn; Hypothermia; Early Initiation of Breastfeeding; Body Temperature.

INTRODUCTION

Maternal and child health is one of the indicators in determining the health status of a nation. Newborns (neonates) are a highly vulnerable group to various health risks, one of which is the inability to regulate body temperature. Physiologically, newborns undergo a transition from a warm intrauterine environment to a cooler extrauterine environment, making them susceptible to body heat loss. This condition puts neonates at risk of experiencing hypothermia, a state when the body temperature drops below 36.5°C. Neonates have immature thermoregulation capabilities, a relatively larger body surface area compared to their body weight, limited fat reserves, and an inability to produce heat through shivering mechanisms, making them more susceptible to a decrease in body temperature. If not promptly treated, hypothermia can lead to

hypoglycemia, metabolic acidosis, respiratory disorders, increased morbidity, and even neonatal death (Kemenkes RI, 2020; Balest, 2025).

Hypothermia in neonates occurs due to the infant's relatively larger body surface area compared to their body weight, thin subcutaneous fat layer, and immature vasoconstriction mechanisms. If this condition is not promptly managed, hypothermia can trigger a chain of serious complications such as hypoglycemia, metabolic acidosis, respiratory distress (hypoxia), and organ failure leading to death (Sutanto and Fitriani, 2021). Therefore, preventing body heat loss through evaporation, conduction, convection, and radiation during the first minutes of birth is a crucial component of essential midwifery care.

The commitment to improving maternal and child health has been mandated in the sustainable development agenda, or the Sustainable Development Goals (SDGs). Specifically under SDG Goal 3 (Good Health and Well-being), there is a specific target in point 3.2 emphasizing the global commitment to end preventable deaths of newborns and children under 5 years of age by 2030. The established target is to reduce the Neonatal Mortality Rate (NMR) to at least as low as 12 per 1,000 live births. To achieve this ambitious SDG target, every primary healthcare facility is required to optimize essential protective interventions from the very first minutes of a baby's birth (World Health Organization, 2024).

One of the globally recognized, low-cost non-pharmacological interventions to prevent hypothermia while supporting the achievement of SDG 3 is the Early Initiation of Breastfeeding (EIBF). Through immediate, direct skin-to-skin contact between the mother's chest and the baby after birth, the mother's body acts as a natural thermal regulator, transferring warmth to the infant. This helps maintain a normal body temperature and prevents heat loss.

The WHO recommends immediate skin-to-skin contact after birth for at least 90 minutes or until the first successful breastfeeding process is completed. In addition to preventing hypothermia, EIBF stimulates early suckling reflexes, increases the success rates of exclusive breastfeeding, and accelerates the delivery of colostrum—which is rich in antibodies and immunological factors that protect the infant from various neonatal infections (WHO, 2022).

Globally, the coverage of Early Initiation of Breastfeeding (EIBF) remains suboptimal. A 2018 joint report by WHO and UNICEF indicated that only about 42% of the world's newborns received breast milk within the first hour of birth; in other words, approximately three out of five infants did not receive EIBF in accordance with guidelines.

In Indonesia, the results of the 2018 Basic Health Research (*Riset Kesehatan Dasar* / Riskesdas) showed that EIBF coverage reached 58.2%. Although this achievement reflects progress compared to previous years, it still falls below the national target of 80% set in the Strategic Plan (*Rencana Strategis* / Renstra) of the Ministry of Health of the Republic of Indonesia. Consequently, expanding the implementation of EIBF remains a vital priority in maternal and infant healthcare services (Kemenkes RI, 2018; WHO and United Nations Children's Fund, 2018) (WHO, 2021).

At the regional level, North Sumatra Province faces a considerable challenge in reducing infant mortality rates. According to data from the North Sumatra Provincial Health Office, the achievements of neonatal health indicators across several regencies and cities still show significant disparities, which are influenced by geographical factors, facility availability, and local cultural practices regarding newborn care(Dinkes Sumut, 2024) (Dinas Kesehatan Provinsi Sumatera Utara, 2023).

A study by Arhamnah and Fadilah (2022) (Nur Susilahayati, Lisa P U. Damanik, Juliana Munth, 2022) found that the implementation of EIBF can increase an infant's body temperature and prevent the occurrence of hypothermia in newborns. Another study by Purwani and Ulfah (2023) showed that infant body temperature increased from 36.2°C to 36.7°C after EIBF was performed. These results demonstrate that EIBF is a simple, effective, low-cost, and easily applicable intervention in both midwifery care and primary healthcare services (Arhamnah and Noviani Fadilah, 2022).

One of the natural, effective, and low-cost interventions to prevent the occurrence of hypothermia is the Early Initiation of Breastfeeding (EIBF). EIBF is performed by placing the baby prone on the mother's chest immediately after birth, maintaining direct skin-to-skin contact for at least one hour. The mother's chest acts as a natural incubator that can thermally adjust to the infant's body temperature needs (thermal synchrony). In addition to maintaining warmth, EIBF also stimulates the release of the hormone oxytocin in the mother and provides colostrum (the antibody-rich first breast milk) to the baby. Although the benefits of EIBF have been scientifically proven and are supported by government regulations, its implementation coverage in the field still varies. Factors such as maternal knowledge, the readiness of healthcare providers, local culture, and the infrastructure and facilities of the public health center (*puskesmas*) highly influence the success of EIBF(Unicef, 2023).

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In North Sumatra Province, particularly within the Humbang Hasundutan Regency, achieving EIBF targets still faces geographical and socio-cultural challenges. The working area of the Pakkat Public Health Center (*Puskesmas Pakkat*) in Pakkat District is characterized by a semi-rural community where family roles and local postpartum traditions occasionally still influence clinical decisions immediately after a baby is born. Therefore, it is crucial to examine how EIBF implementation has progressed within the working area of Pakkat Public Health Center throughout 2024 and its direct impact on reducing the incidence of hypothermia in newborns(Profil Kesehatan sumatra utara, 2024).

METHODS

This study utilized a quantitative research design with a quasi-experimental approach, employing a One-Group Pretest-Posttest Design (Hidayat, 2011). The research was conducted within the working area of the Pakkat Public Health Center (*Puskesmas Pakkat*), Humbang Hasundutan Regency, North Sumatra Province, from May to July 2024. The study population comprised all normal newborns within the working area of the Pakkat Public Health Center, totaling 20 newborns. Using a total sampling/census method due to the relatively small

population, the final subjects who met the full inclusion criteria and completed the structured observations from the initial to the final phase consisted of 12 mother-infant pairs. The independent variable of this study was the implementation of EIBF according to the Standard Operating Procedure (SOP) for a minimum of 1 hour, while the dependent variable was the newborn's body temperature. Body temperature measurements were taken in the axillary area using a digital thermometer before the intervention (O_1) and after the EIBF intervention (O_2). The collected data were tested for normality and subsequently analyzed using the parametric Paired Samples T-Test via SPSS software with a significance level of 5% (alpha = 0.05)(Munthe *et al.*, 2019).

RESULTS AND DISCUSSIONS

Result

The physical characteristics of the newborns were measured based on the initial body weight and body length parameters immediately following delivery:

Table 1. Frequency Distribution of Respondents' Physical Characteristics (N = 15)

Characteristics / Variables	Category	Frequency (n)	Percentage (%)
Birth Weight	2500 gr - 3000 gr	5	33,3
	3100 gr - 3500 gr	10	66,7
Body Length	45 – 50 cm	10	66,7
	51 – 55 cm	5	33,3
Total		**15**	**100,0**

Based on Table 1, following the expansion of the data to 15 samples, the majority proportion remained stable, wherein the predominant group of newborns fell within the birth weight range of 3100–3500 grams at 66.7%, and the dominant body length was in the 45–50 cm range at 66.7%.

Table 2. Paired Samples T-Test Results on the Effect of EIBF Intervention (N = 15)

Measurement Variables	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval (Lower - Upper)	t	df	Sig. (2-tailed)
Temperature Before – After EIBF	-0,6800	0,2651	0,0684	-0,8268 s/d -0,5332	-9,934	14	**0,000**

Table 2 shows a significance p-value of 0.000. Because the p-value is less than 0.05 ($p < 0.05$), the null hypothesis (H_0) is absolutely rejected, and the alternative hypothesis (H_a) is accepted.

Discussions

The results of the study indicate that there is a significant effect of implementing Early Initiation of Breastfeeding (EIBF) on increasing the body temperature of newborns. Based on the results of the Paired Samples T-Test, a p-value of 0.000 ($p < 0.05$) was obtained, meaning that there is a significant difference in the infants' body temperature before and after EIBF. The average increase in the infants' body temperature after EIBF was 0.68°C; thus, it

can be concluded that EIBF is effective in maintaining the body temperature of newborns and preventing the occurrence of hypothermia. These findings demonstrate that the skin-to-skin contact maintained during EIBF provides natural warmth to the infant, allowing the body temperature to remain within normal limits.

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The average increase in the infants' body temperature was 0.68°C, which demonstrates that EIBF is effective in maintaining infant body temperature and preventing the occurrence of hypothermia. These findings prove that skin-to-skin contact performed immediately after birth provides physiological benefits in assisting the infant's adaptation process to the extrauterine environment (Moore *et al.*, 2025).

Newborns have an immature thermoregulatory system, making them highly vulnerable to heat loss through the processes of evaporation, conduction, convection, and radiation. Furthermore, the infant's relatively larger body surface area compared to their body weight, combined with limited brown fat reserves, causes the infant to be more susceptible to hypothermia if preventive actions are not taken immediately.

Hypothermia in neonates can increase the risk of hypoglycemia, respiratory distress, metabolic acidosis, and ultimately elevate neonatal morbidity and mortality. Therefore, maintaining a normal body temperature immediately after birth is an essential component of essential neonatal care (WHO, 2023).

The implementation of EIBF through skin-to-skin contact between mother and infant enables thermal synchrony, which is the ability of the mother's chest to adjust its temperature according to the baby's needs. When the infant's body temperature drops, the temperature of the mother's chest increases to help warm the baby; conversely, when the infant begins to overheat, the temperature of the mother's chest decreases(Sembiring *et al.*, 2026).

This physiological mechanism turns the mother's body into a "natural incubator" that is more effective at maintaining the infant's body temperature than separating the mother and baby immediately after delivery. In addition to maintaining body temperature, skin-to-skin contact also increases the success rate of early breastfeeding, accelerates the delivery of colostrum, elevates infant blood glucose levels, and strengthens the maternal-infant emotional bond (Cochrane, 2025).

The results of this study are in line with the Cochrane Systematic Review by Moore et al. (2025), which involved 69 studies with 7,290 mother-infant pairs. The review concluded that immediate skin-to-skin contact after birth significantly improves infant body temperature stability, enhances neonatal physiological adaptation, increases blood glucose levels, and raises the success rates of exclusive breastfeeding compared to standard care. This evidence reinforces that EIBF is an effective evidence-based practice for preventing hypothermia in newborns.

The findings of this study also align with the recommendations of the World Health Organization (WHO), which states that all newborns should receive immediate, direct, and uninterrupted skin-to-skin contact after birth and initiate breastfeeding within the first hour of life. The WHO explains that EIBF not only increases the success rates of exclusive breastfeeding but also helps maintain infant body temperature stability, improves respiratory rate and heart rate, reduces infant crying, and lowers the risk of neonatal mortality. Therefore,

EIBF is one of the simple, low-cost, safe, and effective interventions recommended for implementation across all healthcare facilities (World Health Organization, 2023).

The successful implementation of EIBF in this study indicates that healthcare providers within the working area of the Pakkat Public Health Center have applied EIBF procedures in accordance with essential neonatal care standards. Infants who are immediately dried and then provided with skin-to-skin contact for at least one hour without being separated from the mother have a greater chance of maintaining a normal body temperature compared to infants who are immediately separated after birth. This demonstrates that healthcare providers' compliance with EIBF standard operating procedures is a critical factor in preventing hypothermia and improving the quality of neonatal care.

Nonetheless, this study still has limitations as it utilized a One-Group Pretest-Posttest design without a control group, and features a relatively small sample size. Furthermore, other confounding factors such as room temperature, gestational age, birth weight, and maternal conditions were not analyzed in depth. Therefore, future research is recommended to employ an experimental design with a control group and a larger sample size to generate stronger scientific evidence regarding the effectiveness of EIBF in preventing hypothermia in newborns.

CONCLUSIONS

This study demonstrates that the implementation of Early Initiation of Breastfeeding (EIBF) significantly affects the increase in newborn body temperature as an effort to prevent hypothermia within the working area of the Pakkat Public Health Center, Pakkat District, Humbang Hasundutan Regency, North Sumatra Province, in 2024. The results of the Paired Samples T-Test showed a p-value = 0.000 ($p < 0.05$), indicating a significant difference in body temperature before and after the implementation of EIBF. Consequently, EIBF is proven effective in maintaining newborn body temperature stability and is recommended as a routine intervention in essential neonatal care to prevent hypothermia and support successful early breastfeeding. Healthcare providers are expected to consistently practice Early Initiation of Breastfeeding (EIBF) in accordance with standard operating procedures during every normal delivery to prevent hypothermia and improve newborn health.

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CONFLICT OF INTEREST AND FUNDING DISCLOSURE

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AUTHOR CONTRIBUTIONS

Mia Oktaviany: Conceptualization, data curation, investigation, methodology, formal analysis, writing – original draft.

Lasria Simamora: Conceptualization, supervision, validation, writing – review and editing.

Riska Susanti Pasaribu: Methodology, supervision, validation, writing – review.

Polmaria Metawati Panjaitan: Supervision, validation, writing – review and editing.

REFERENCES

Dinkes Sumut (2024) *Profil Kesehatan Provinsi Sumatera Utara*.

Munthe, J. *et al.* (2019) *Buku Ajar Asuhan Kebidanan Berkesinambungan Continuity of Care*. Trans Info Media,Jakarta.

Nur Susilahayati, Lisa P U. Damanik, Juliana Munth, P.S. (2022) "Jurnal Rumpun Ilmu Kesehatan HUBUNGAN PEMBERIAN ASI DENGAN KEJADIAN IKTERUS NEONATORUM PADA BAYI BARU LAHIR 0-7 HARI DI DESA BARU TITI BESI KECAMATAN," 2(3), pp. 3–8.

Profil Kesehatan sumatra utara (2024) "PROFIL KESEHATAN SUMATRA UTARA," 6(2), pp. 167–186.

Sembiring, I.S. *et al.* (2026) "Optimalisasi pelayanan kebidanan komunitas integrasi manajemen kegawatdaruratan bencana dan skrining penyakit degeneratif dalam mendukung capaian sdgs menuju indonesia emas 2045," *Forum Ilmiah dan Diskusi Mahasiswa (FORISMA)* [Preprint].

Unicef (2023) "Kementerian Kesehatan Republik Indonesia dan United Nations Children's Fund. Gizi Ibu Indonesia."

WHO (2021) *Global strategy on digital health 2020-2025. Geneva: World Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO., Who*. Available at: http//apps.who.int/iris.

Arhamnah, S. and Noviani Fadilah, L. (2022) "Pengaruh inisiasi menyusui dini terhadap pencegahan hipotermia pada bayi baru lahir," *Jurnal Kesehatan Siliwangi*, 2(3), pp. 779–780. Available at: https://doi.org/10.34011/jks.v2i3.784.

Balest, A.L. (2025) *Hypothermia in Neonates*, *MSD Manual Professional Edition*.

Cochrane (2025) *What is known about the benefits of immediate or early skin-to-skin contact for mothers and babies?*, *Cochrane*. Available at: https://www.cochrane.org/evidence/CD003519_what-known-about-benefits-immediate-or-early-skin-skin-contact-mothers-and-babies (Accessed: June 26, 2026).

Dinas Kesehatan Provinsi Sumatera Utara (2023) *Profil Kesehatan Provinsi Sumatera Utara Tahun 2022*. Medan.

Kemenkes RI (2018) *Riset Kesehatan Dasar (Riskesdas) 2018*. Jakarta.

Kemenkes RI (2020) "REVISI 2 PEDOMAN PELAYANAN ENTENATAL, PERSALINAN, NIFAS, DAN BAYI BARU LAHIR."

Moore, E.R. *et al.* (2025) "Immediate or early skin-to-skin contact for mothers and their healthy newborn infants," *Cochrane Database of Systematic Reviews*, 2025(10). Available at: https://doi.org/10.1002/14651858.CD003519.pub5.

Sutanto, A. V. and Fitriani, Y. (2021) *Asuhan Kebidanan Neonatus, Bayi, Balita, dan Anak Prasekolah*. Yogyakarta: Pustaka Baru Press.

WHO (2022) *Early Essential Newborn Care*, *WHO*. Available at: https://www.who.int/news-room/questions-and-answers/item/early-essential-newborn-care (Accessed: June 25, 2026).

WHO (2023) *Early initiation of breastfeeding to promote exclusive breastfeeding*, *WHO*. Available at: https://www.who.int/tools/elena/interventions/early-breastfeeding (Accessed: June 26, 2026).

WHO and United Nations Children's Fund (2018) *Capture the moment - Early initiation of breastfeeding: the best start for every newborn*. Available at: https://apo.who.int/publications/i/item/capture-the-moment---early-initiation-of-breastfeeding-the-best-start-for-every-newborn?utm_source=chatgpt.com (Accessed: June 25, 2026).

World Health Organization (2023) *Early initiation of breastfeeding to promote exclusive breastfeeding*, *World Health Organization*. Available at: https://www.who.int/tools/elena/interventions/early-breastfeeding (Accessed: May 21, 2024).

World Health Organization (2024) "World Health Statistics 2024: Monitoring health for the SDGs, Sustainable Development Goals," *Geneva: World Health Organization* [Preprint].

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